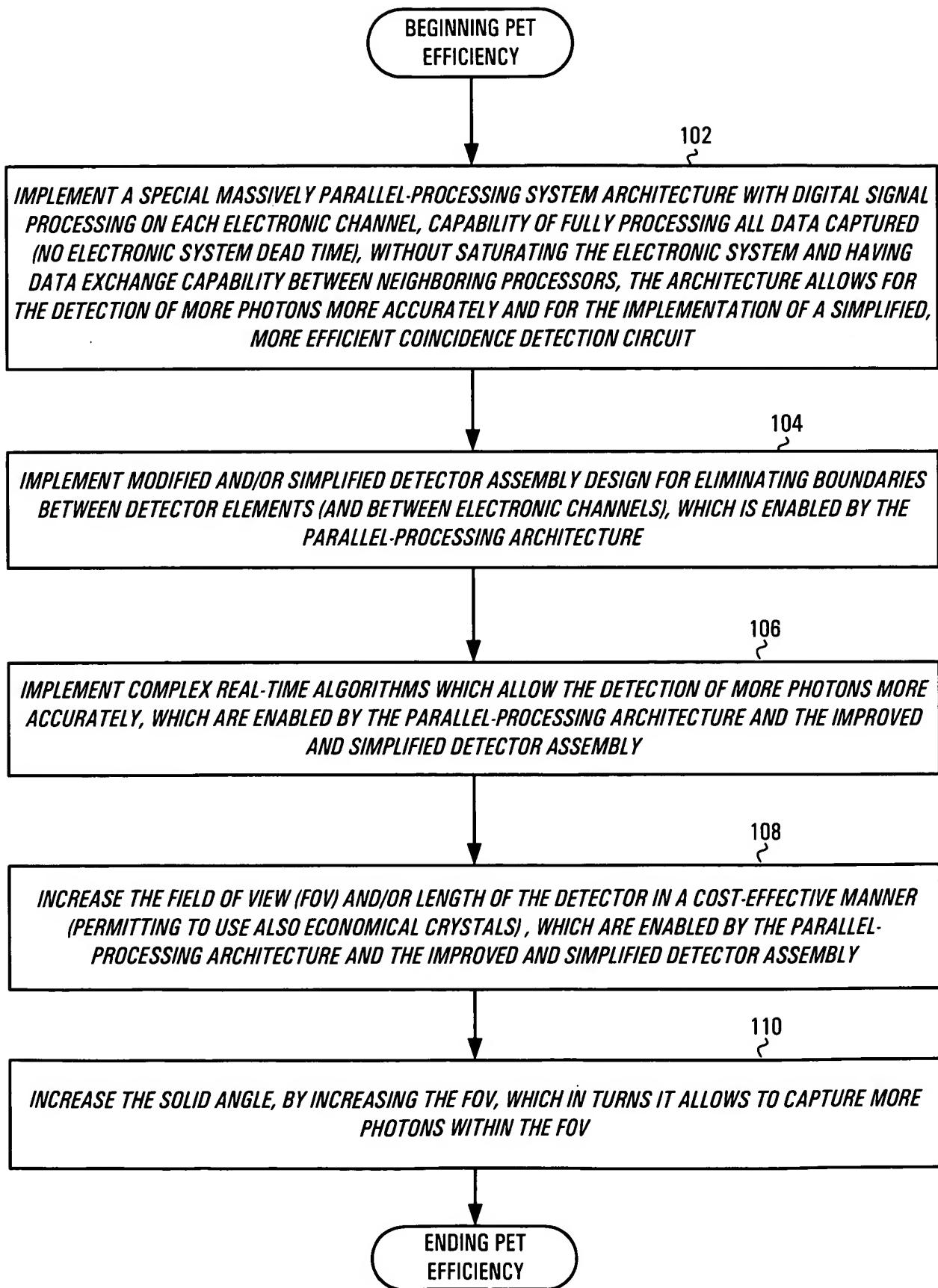


FIG. 1



**PRIOR ART PET
with SHORT FOV**

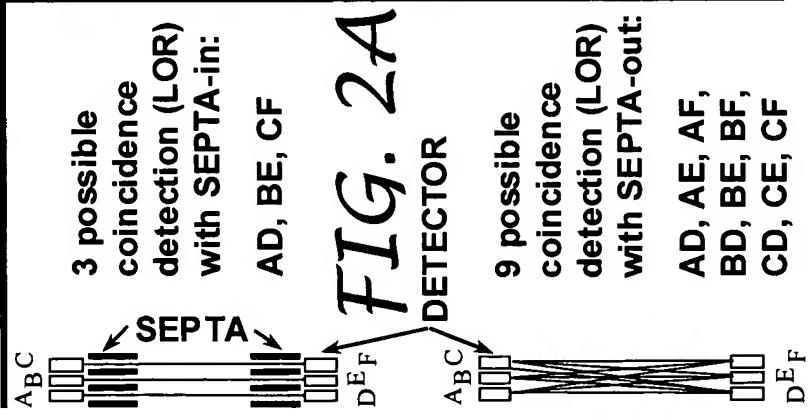


FIG. 2A

9 possible coincidence detection (LOR) with SEPTA-out:

AD, AE, AF,
BD, BE, BF,
CD, CE, CF

INCREASING THE FOV

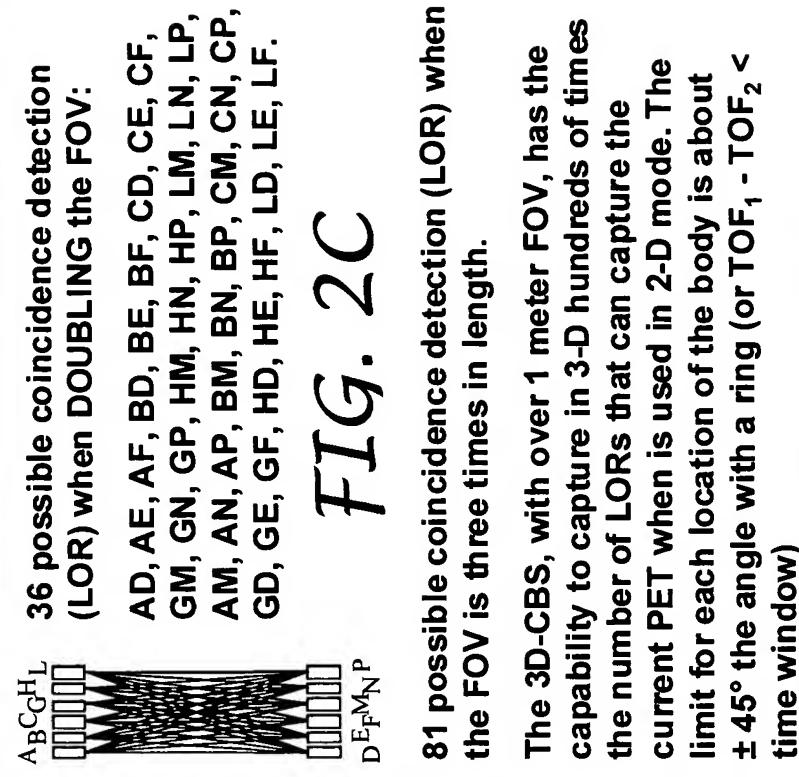


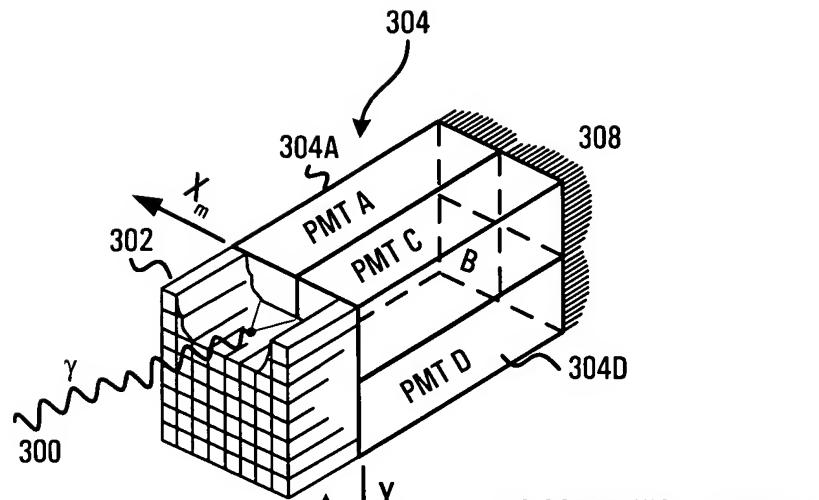
FIG. 2C

81 possible coincidence detection (LOR) when the FOV is three times in length.

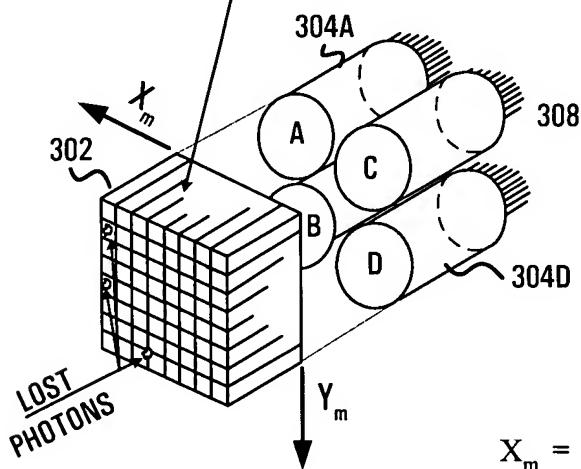
The 3D-CBS, with over 1 meter FOV, has the capability to capture in 3-D hundreds of times the number of LORs that can capture the current PET when is used in 2-D mode. The limit for each location of the body is about $\pm 45^\circ$ the angle with a ring (or $\text{TOF}_1 - \text{TOF}_2 <$ time window)

FIG. 2B

FIG. 2D



VARIABLE LENGTH SLITS IN
CRYSTAL(S). POOR LIGHT
SHARING BETWEEN CRYSTALS



SMALL CRYSTAL OPTICALLY
COUPLED TO FOUR PMTs

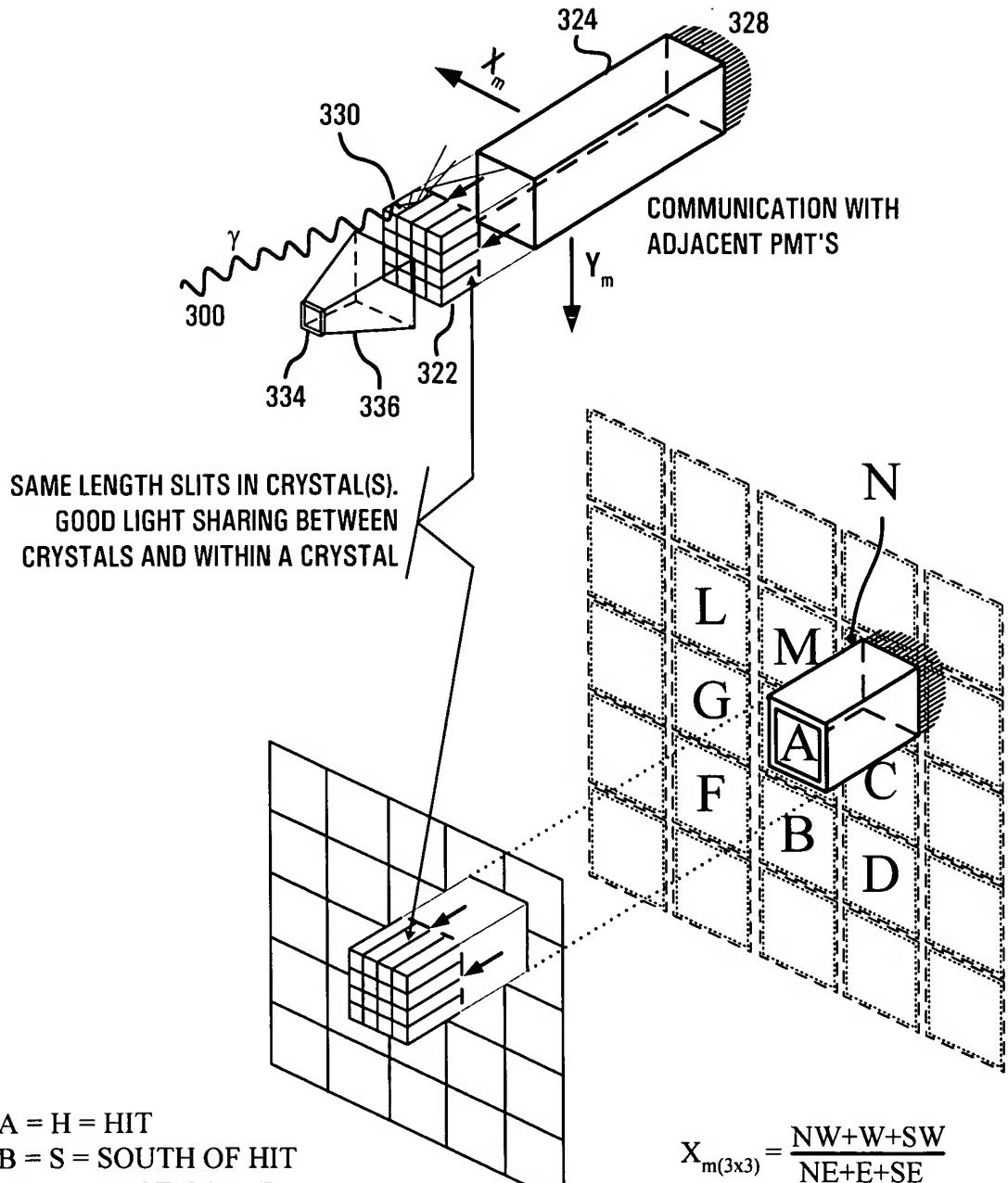
CRYSTAL OF INTERACTION
DETERMINED BY LIGHT
SHARING BETWEEN 2x2 PMTs

$$X_m = \frac{(A + B) - (C + D)}{A + B + C + D}$$

$$Y_m = \frac{(B + D) - (A + C)}{A + B + C + D}$$

FIG. 3A

PRIOR ART



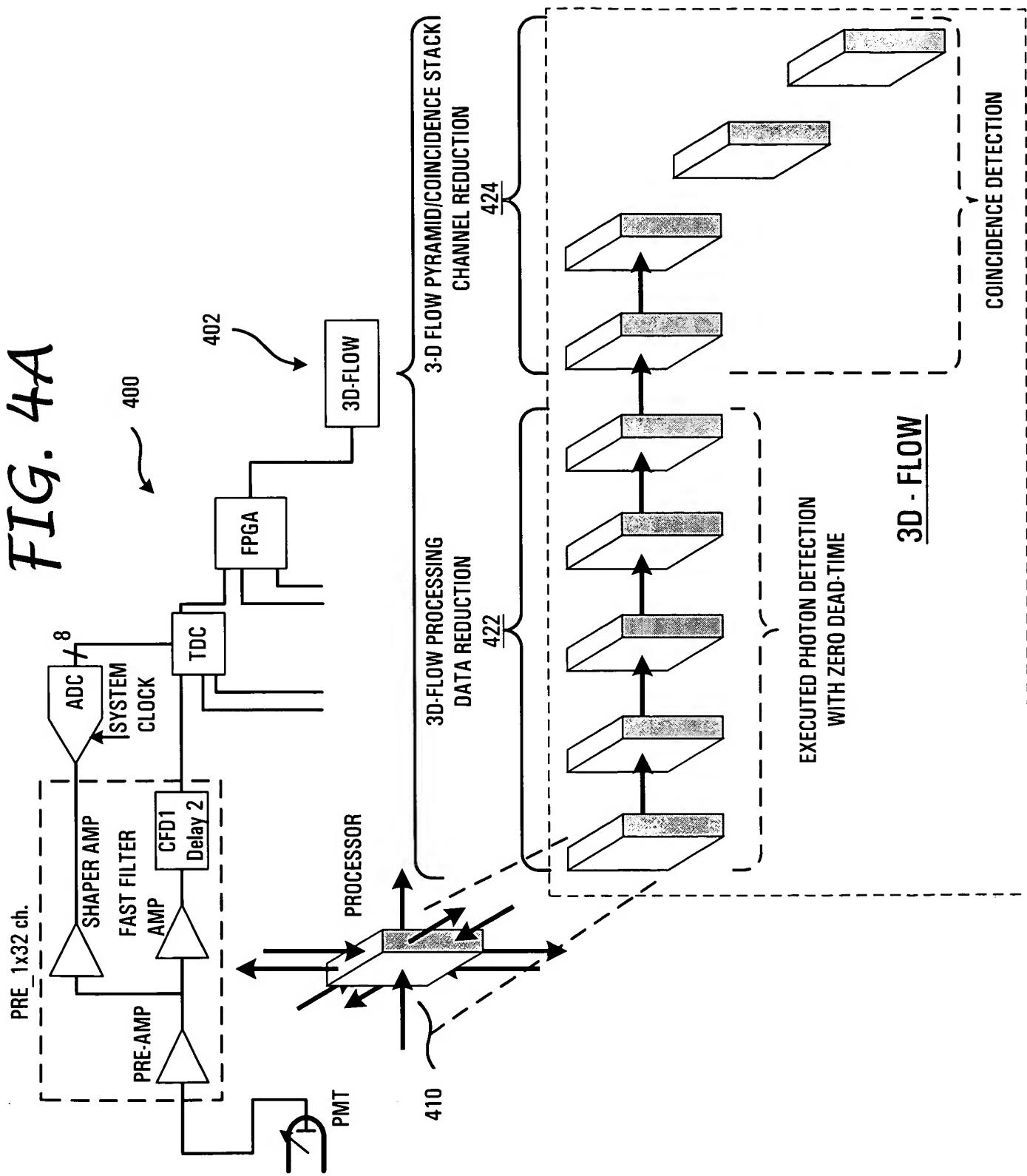
$$X_{m(3 \times 3)} = \frac{NW + W + SW}{NE + E + SE}$$

$$Y_{m(3 \times 3)} = \frac{SW + S + SE}{NW + N + NE}$$

CRYSTAL OF INTERACTION DETERMINED BY
LIGHT SHARING BETWEEN ANY 3x3 PMT'S

FIG. 3B

FIG. 4A



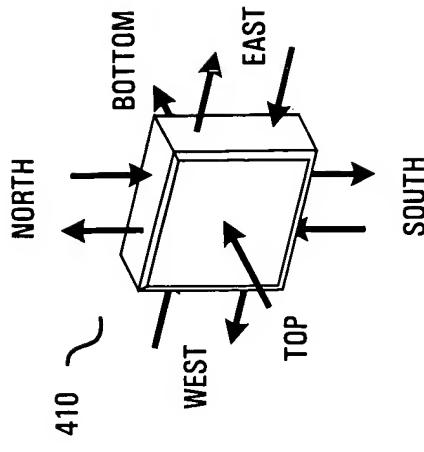


FIG. 4C

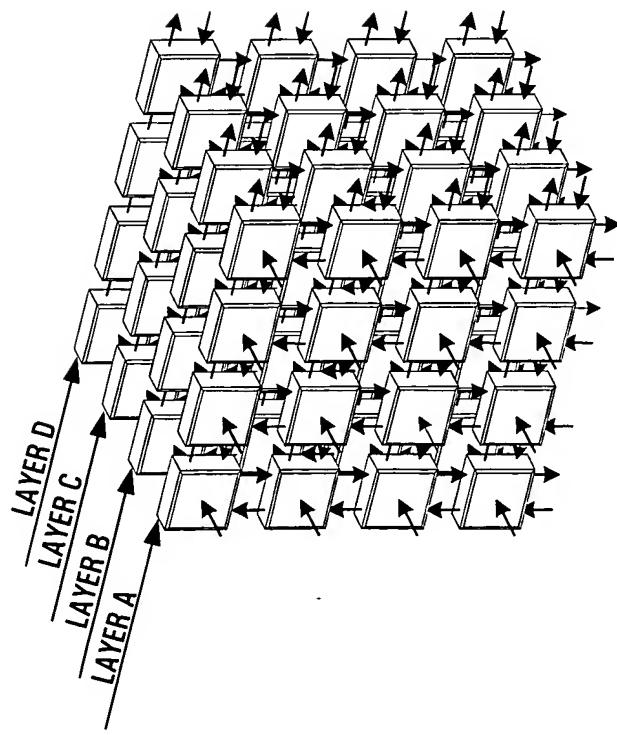


FIG. 4B

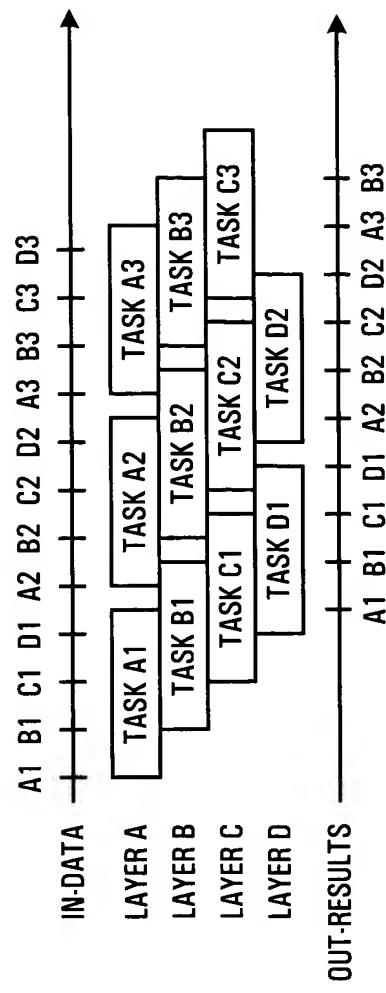


FIG. 4D

FIG. 5

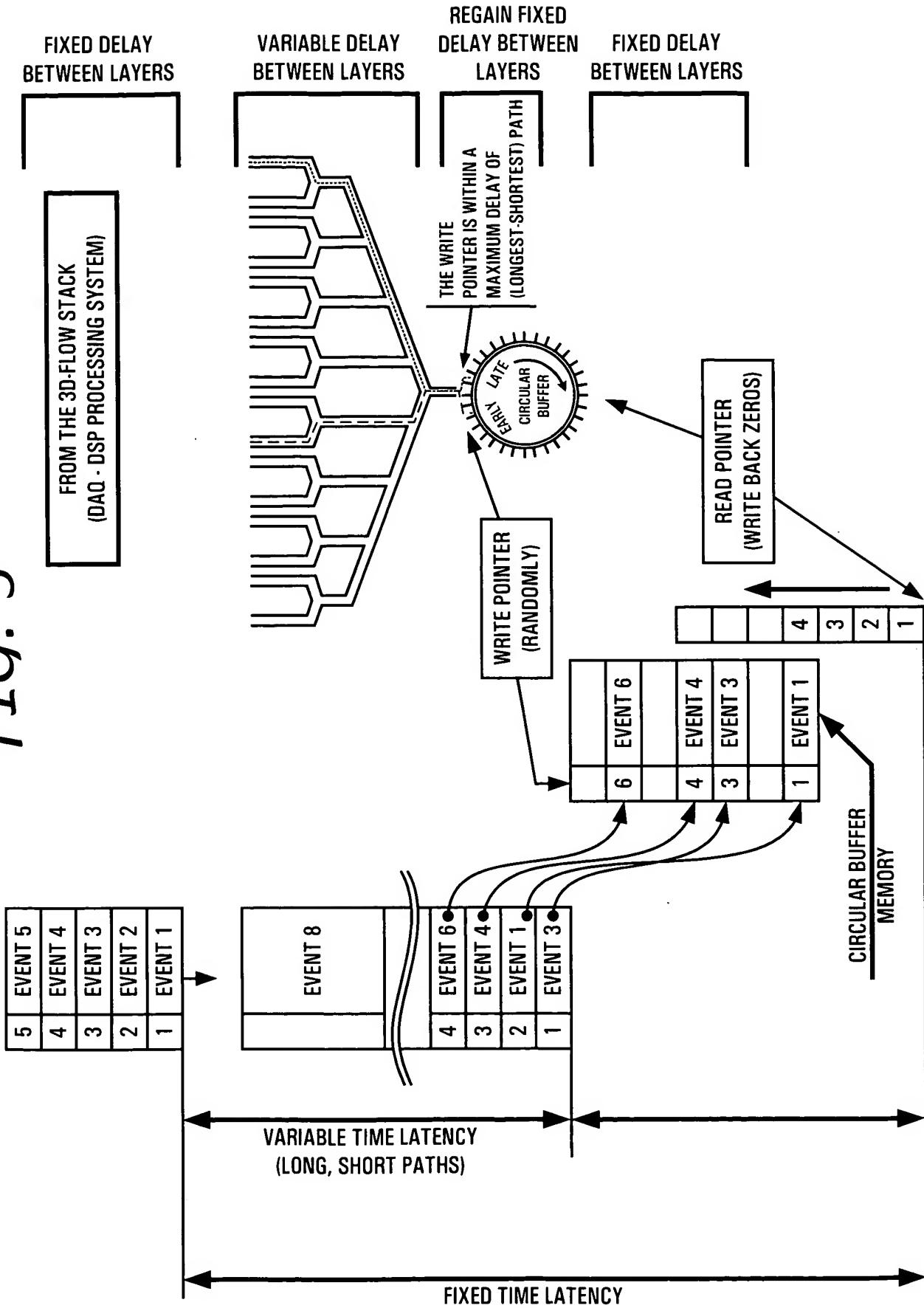


FIG. 6

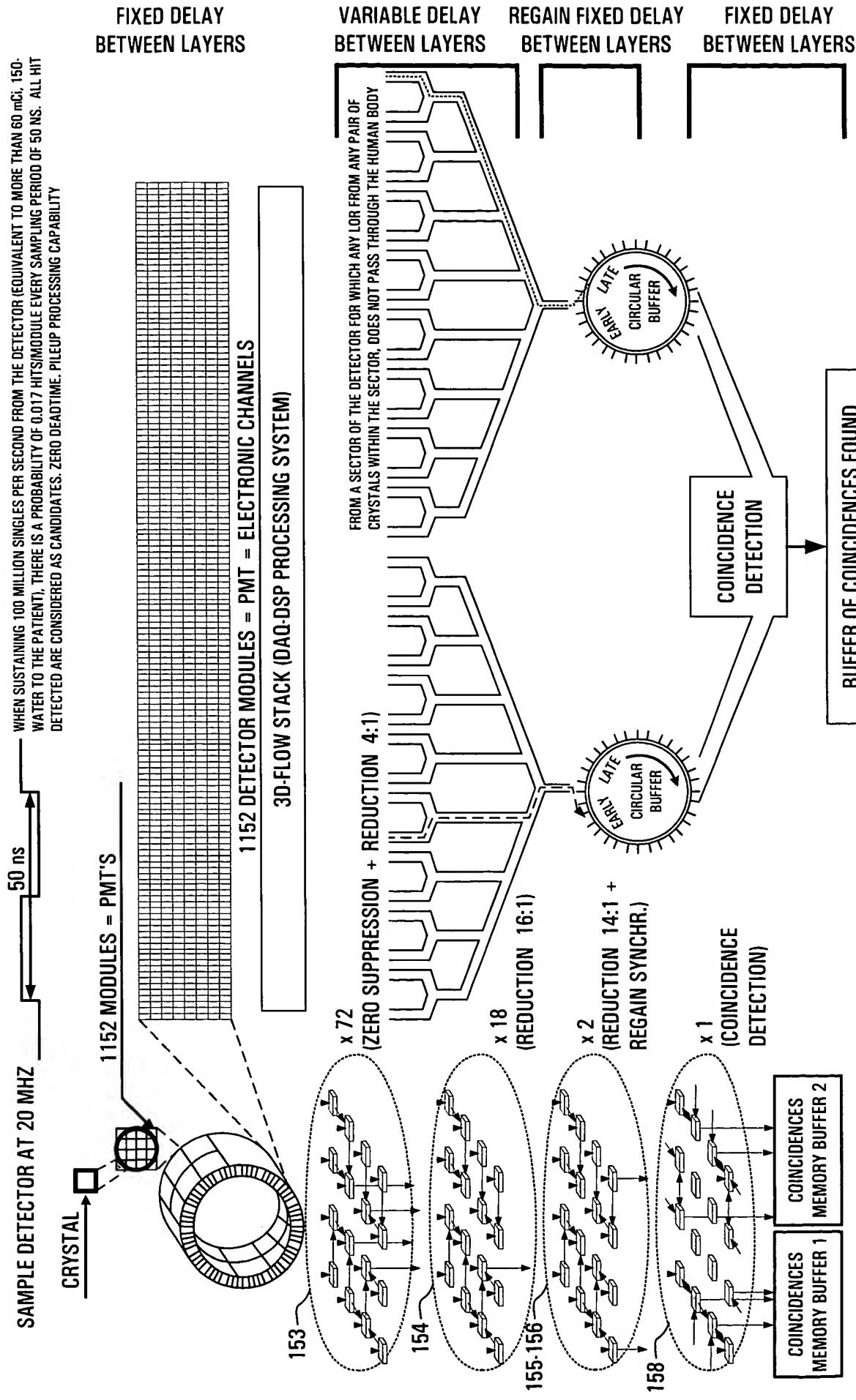


FIG. 7

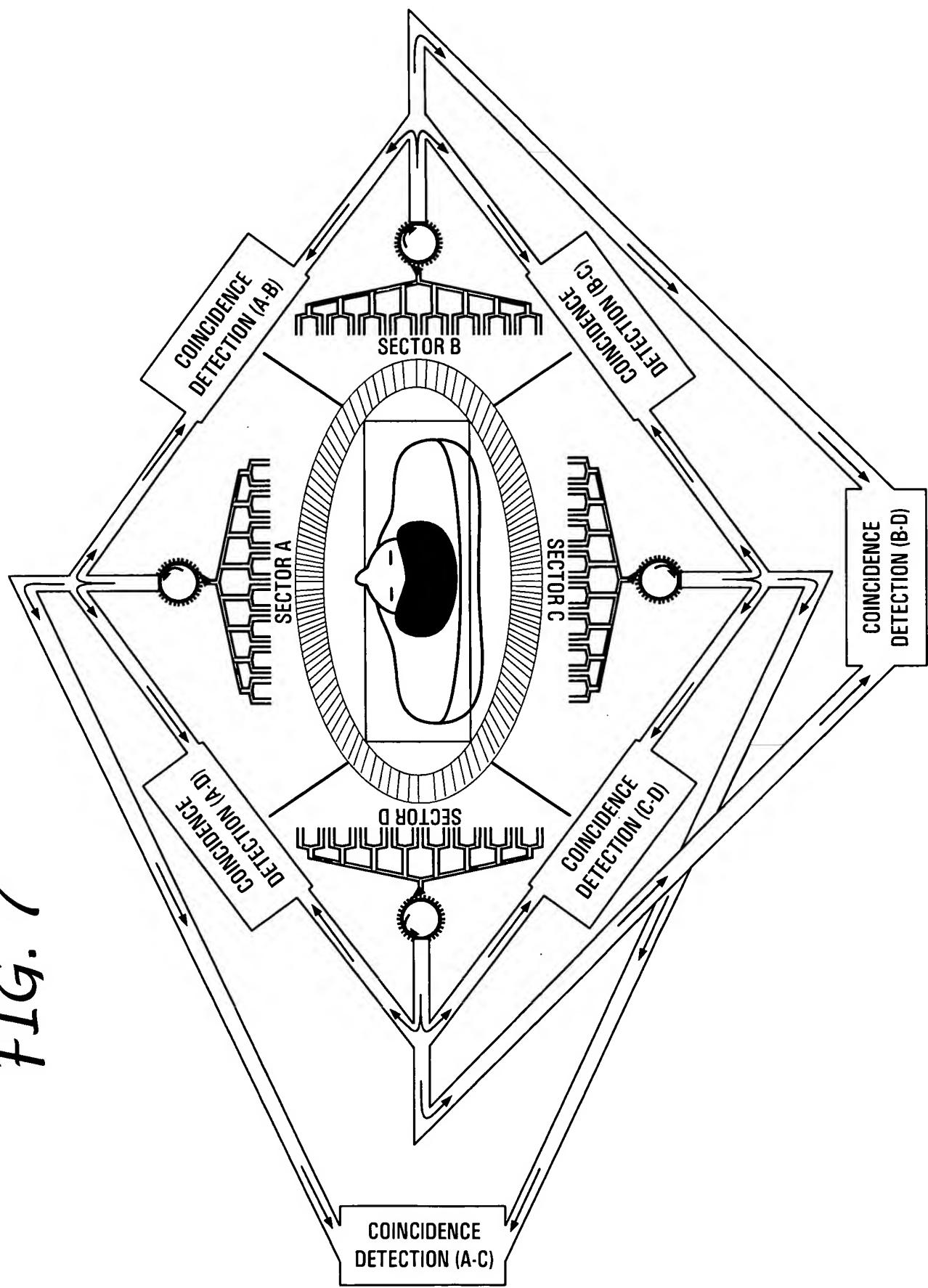
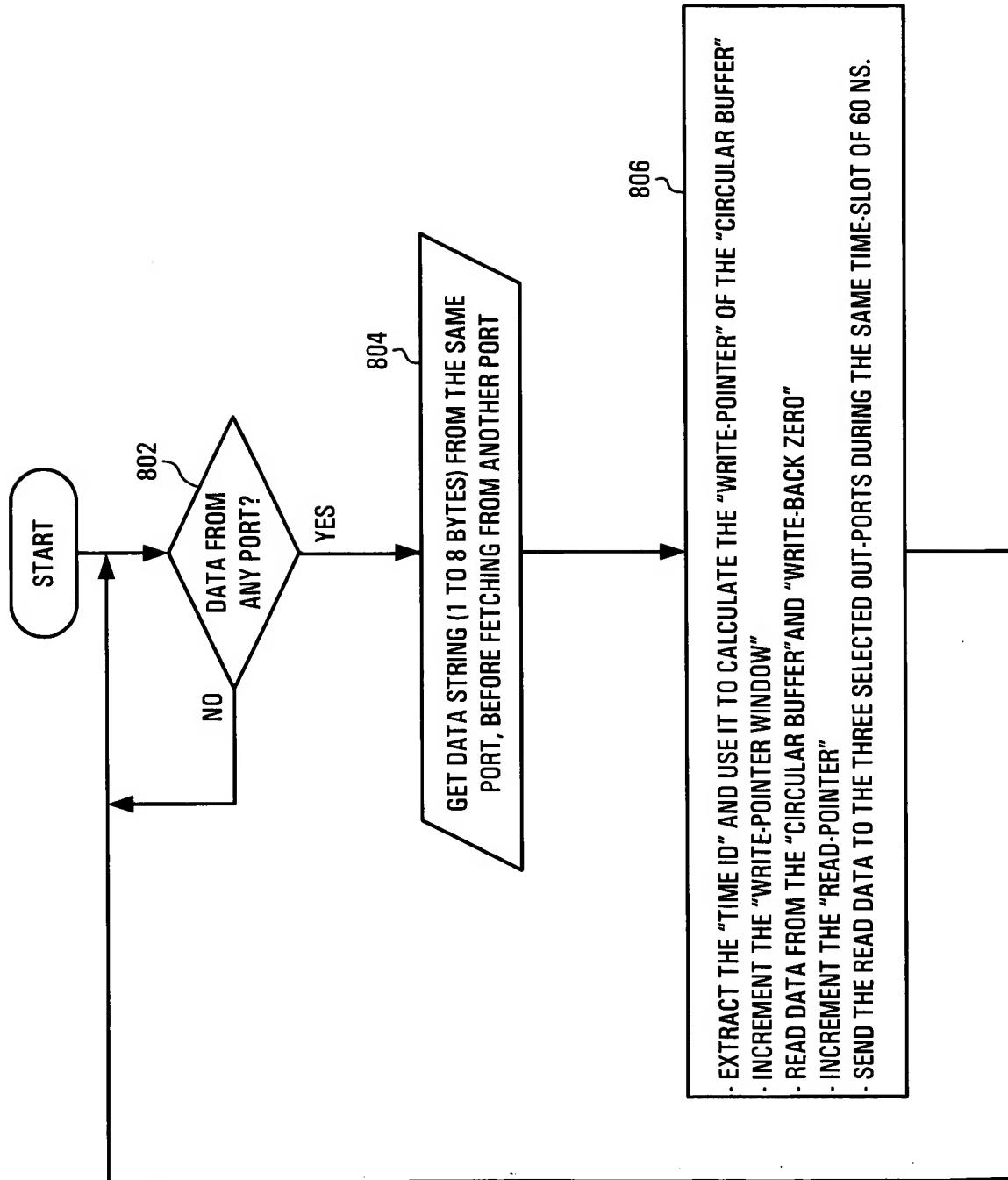


FIG. 8



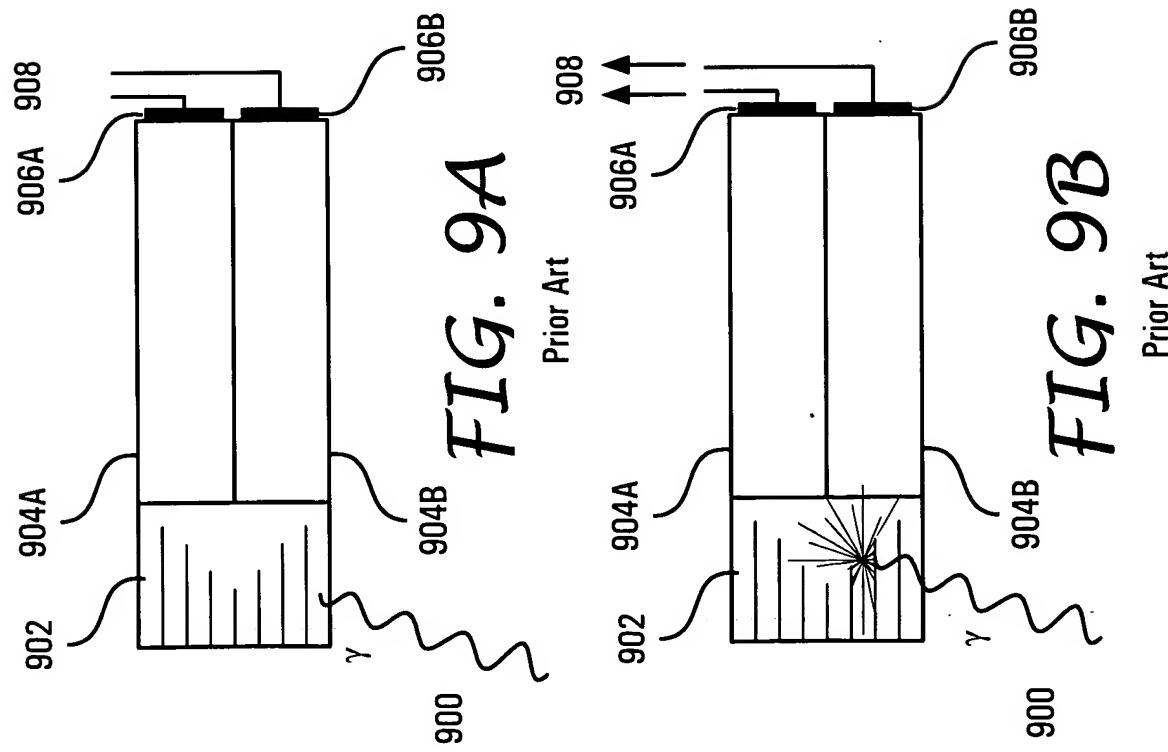
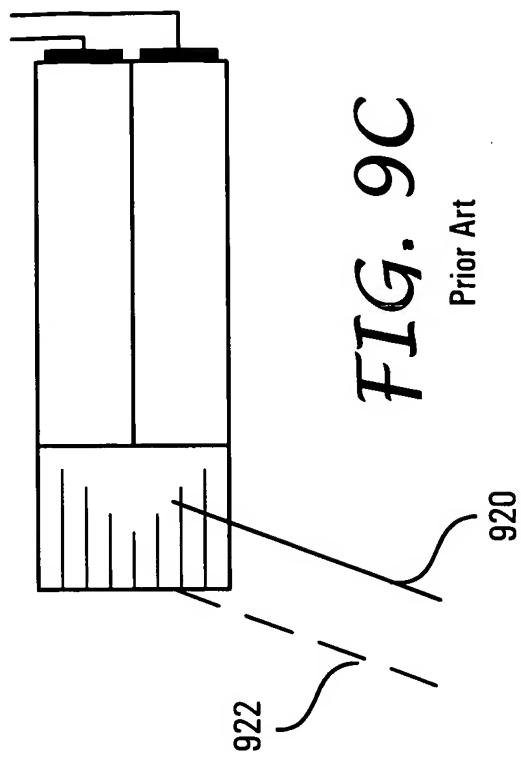


FIG. 10

